UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Northwest Region
7600 Sand Point Way N.E., Bldg. 1
Seattle, WA 98115

Refer to:
2003/00017

May 9, 2003

Mr. Fred Patron
Federal Highway Administration
The Equitable Center, Suite 100
530 Center Street NE
Salem, OR 97301

Re: Endangered Species Act Section 7 Formal Consultation and Magnuson-Stevens Fishery Management and Conservation Act Essential Fish Habitat Consultation on the Effects of the Umatilla High Culvert (Stewart Creek) Project, Umatilla County, Oregon

Dear Mr. Patron:

Enclosed is a biological opinion (Opinion) pursuant to section 7 of the Endangered Species Act (ESA) prepared by NOAA's National Marine Fisheries Service (NOAA Fisheries), on the effects of the proposed Umatilla High Culvert (Stewart Creek) Project**,** Umatilla County, Oregon. In this Opinion, NOAA Fisheries concludes that the proposed action is not likely to jeopardize the continued existence of ESA-listed Middle Columbia River (MCR) steelhead (*Oncorhynchus mykiss*). As required by section 7 of the ESA, NOAA Fisheries includes reasonable and prudent measures with non-discretionary terms and conditions that NOAA Fisheries believes are necessary to minimize the effect of incidental take associated with this action.

This document also serves as consultation on essential fish habitat pursuant to section 305(b) of the Magnuson-Stevens Fishery Conservation and Management Act and implementing regulations at 50 CFR Part 600.

If you have any questions regarding this consultation, please contact Tom Loynes of my staff in the Oregon Habitat Branch at 503.231.6892.

Sincerely,

for Michael R Crouse

D. Robert Lohn
Regional Administrator

cc: Molly Cary, ODOT
Diana Hwang, USFWS
Tom Murtaugh, ODFW
Shelly Schmidt, ODOT

Endangered Species Act - Section 7 Consultation
Biological Opinion

&

Magnuson-Stevens Fishery Conservation and Management Act
Essential Fish Habitat Consultation

Umatilla High Culvert (Stewart Creek) Project,
Umatilla County, Oregon

Agency:	Federal Highway Administration
Consultation Conducted By:	NOAA's National Marine Fisheries Service, Northwest Region
Date Issued:	May 9, 2003
Issued by:	for Michael R Crouse D. Robert Lohn Regional Administrator
Refer to:	**2003/00017**

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1. INTRODUCTION

1.1 Background

On January 13, 2003, NOAA's National Marine Fisheries Service (NOAA Fisheries) received a request from the Federal Highway Administration (FHWA) for Endangered Species Act (ESA) section 7 formal consultation for the Umatilla High Culvert (Stewart Creek) Project, Umatilla County, Oregon. The Oregon Department of Transportation (ODOT) is the applicant and the designated non-Federal representative of the FHWA. ODOT is responsible for both project design and construction.

In the January 8, 2003, letter and accompanying biological assessment (BA), the FHWA requested formal consultation for Middle Columbia River (MCR) steelhead (*Oncorhynchus mykiss*). The FHWA has determined that this listed evolutionarily significant unit (ESU) of Columbia basin salmonids may occur within the project area, and that the proposed project is "likely to adversely affect"(LAA) this species.

This biological opinion (Opinion) is based on the information presented in the BA, site visits, discussions with ODOT, and the Oregon Department of Fish and Wildlife (ODFW), and considers the potential effects of the proposed action on MCR steelhead. MCR steelhead were listed as threatened on March 25, 1999 (64 FR 14517) and protective regulations issued on July 10, 2000 (65 FR 42422). This consultation is conducted pursuant to section 7(a)(2) of the ESA and its implementing regulations, 50 CFR 402.

1.2 Proposed Action

The proposed action is to remove an existing culvert and replace it with a bridge. Another adjacent culvert will be retrofitted with baffles to enable better fish passage. A roughened chute will be constructed to allow for both adult and juvenile fish passage.

The project BA includes a set of conservation measures or best management practices (BMPs) designed to minimize adverse effects to MCR steelhead and their habitats. These BMPs are described on pages 21-26 of the BA. Specific BMPs for in-water work, culvert retrofitting and replacement, clearing and grubbing, erosion control, equipment staging, hazardous materials, and site-specific conservation measures are included. NOAA Fisheries regards these BMPs as integral components of the project and considers them to be part of the proposed action.

Direct effects to listed species may occur at the project sites and may extend upstream or downstream based on: (1) The potential for impairing fish passage; (2) changes to stream hydraulics; (3) sediment and pollutant discharge; (4) risk of chemical contamination of the aquatic environment; (5) stormwater effects; and (6) the extent of riparian habitat modifications. Indirect effects to listed species may occur throughout the watershed where actions described in this Opinion lead to additional activities or affect ecological functions contributing to stream degradation. As such, the action area for the proposed activities includes the immediate

watershed where the proposed action will occur, and those areas upstream and downstream that may reasonably be affected, temporarily or in the long term. For the purposes of this Opinion, the action area is defined as the streambed and streambank of Stewart Creek, extending upstream to the project disturbance limits, and downstream 33 meters below the project disturbance limits. Other areas of the Birch Creek and Stewart Creek watersheds will not be directly affected.

All in-water work activities will occur during the ODFW preferred in-water work timing guideline[1] of July 1 through October 31. Any extensions or alterations to the standard in-water work timing will require the written concurrence of a NOAA Fisheries biologist.

1.2.1 Temporary Water Management Work Area Isolation

If a non-typical summer occurs and the project area has water during the ODFW in-water work window, then temporary water management, work area isolation and fish removal will occur. Otherwise, these actions will not be necessary.

Fish will be removed from the work area before installation of the temporary water management system (TWMS). The fish salvage/rescue effort will be conducted by qualified and permitted ODOT and/or ODFW biologists. One, or a combination of the following methods will accomplish fish removal: Seining, dip netting, and/or electro-fishing.

The TWMS will route the water in Stewart Creek around the work area. A sandbag dam will be constructed at the inlet of the reinforced concrete box culvert (RCBC) to direct water, via a pipe, through the RCBC and carry the water from Stewart Creek downstream to just beyond the limits of the roughened chute. ODOT's Geo-Hydro Section will determine the size of the pipe.

Downstream fish passage for juveniles will be maintained throughout construction if there is water in Stewart Creek. Currently, conditions within the existing culvert and the steps at the outlet of the existing RCBC during low flows prohibit upstream passage of juvenile steelhead. Because the action will take place during the ODFW preferred in-water work period for Stewart Creek, no adult steelhead are expected to be present during construction.

1.2.2 Retrofitting the Existing Culvert

The existing concrete box culvert will be retrofitted with weirs every five meters throughout the length of the culvert. The weirs will be constructed of nine-millimeter extruded plastic. The weirs will span the entire width of the culvert for three meters, and will have a notch in the center measuring 0.25 meters wide by 0.2 meters high. The remainder of the weir will be 0.3 meters high by three meters long, and will be secured to the culvert floor using galvanized or stainless steel expansion bolts. Starting at the outlet edge of the existing culvert, the weirs will

[1] Oregon Department of Fish and Wildlife, *Guidelines for Timing of In-Water Work to Protect Fish and Wildlife Resources*, 12 pp (June 2000)(identifying work periods with the least impact on fish) (http://www.dfw.state.or.us/ODFWhtml/InfoCntrHbt/0600_inwtrguide.pdf).

be installed upstream every five meters, using a pneumatic or electric drill. This will provide suitable jump height for juvenile fish, and a pool depth adequate for large fish and slower velocities. In addition, crack repairs will be made by epoxy injection during the in-water work window when the channel is dry. Grout will be used to repair the cracks in the RCBC to prevent water from flowing out the sides and causing further damage to the road fill. Loose material will be chipped from the cracks before grouting. The chipped material will be collected and disposed of.

1.2.3 Arch Pipe Removal and Construction of the Roughened Chute

The existing arch pipe will be removed and a roughened chute will be constructed. The existing concrete steps between the box culvert and the arch pipe will be removed, and the creek channel will be raised to provide fish access into the existing box culvert. The channel under the new bridge will consist of a roughened chute approximately 18.4 meters long and 3.5 meters wide. The area affected will widen as it moves from under the bridge and "fans" out at the downstream end. The depth of excavation of the existing channel will vary from roughly 0.9 meters to 1.2 meters. Raising the channel will be accomplished by adding metric class 350 rock. A well-graded mixture of riprap will then be placed in the channel, with fines placed over the riprap to fill in the larger spaces. Water compaction will help get the fines into the interstitial spaces in the rock and provide a seal. Boulders will be placed in the channel to provide holding areas and hydraulic shadows for fish. Small pools will be constructed as part of the chute thalweg to aid in fish passage during low flow periods. Due to low clearance, the extremely tight site conditions, large woody material will not be incorporated into the roughened chute design, as the roughened chute will be directly under the bridge.

Riparian and upland plantings will occur within the disturbed area within ODOT right of way. Approximately 45 plants will be planted. Thirty willow (*Salix spp*.) will be planted within the two-year high water elevation and 15 hawthorn (*Crataegus douglasii*) will be planted above the two-year high water elevation. Plants will be propagated and/or collected from within the Umatilla basin.

Construction of the roughened chute will take approximately three to five days and will be completed entirely from the existing roadway. It will not be necessary to park, drive, or stage equipment in the stream channel. No access road will be needed. Removing the existing arch pipe culvert and the concrete steps at the outlet of the existing RCBC will be done from the roadway.

Following completion, ODOT shall inspect the site and promptly perform any necessary maintenance and repairs to ensure that the fish passage improvements shall continue to function as desired. Actions that may take place after construction includes the addition of fines if the channel goes subsurface and rearranging material to improve fish passage.

ODOT will notify NOAA Fisheries and ODFW before performing any maintenance on the roughened chute. The maintenance work will be done during the ODFW preferred in-water

work period for Stewart Creek (July 1 to October 31) unless both ODFW and NOAA Fisheries approve work outside of that window.

1.2.4 Construction of the New Bridge

The bridge typical section consists of precast, prestressed concrete slabs with concrete "F" bridge railing. Roadway width on the bridge will be 7.7 meters, with the total bridge width at 8.5 meters. The crown at centerline will be 2%. Metric class 350 riprap will be used to protect the wingwalls from scour. Approximately 146 cubic meters of riprap will be placed to construct the roughened-chute and for scour protection. Concrete wingwalls will be installed at each end of the bridge, and will be from 3.5 meters to 5.0 meters long, and approximately three meters high.

The roadway typical section consists of two, three-meter lanes, with 0.6 meter shoulders with 1:2 to 1:4 variable slopes to match existing slopes. The roadway will taper at both ends to match into existing roadway widths.

Currently, drainage from the roadway drains directly off the pavement through the shoulder rock and through a variety of grasses before moving downslope into Stewart Creek. Drainage at the existing arch pipe moves directly through shoulder rock and into Stewart Creek. There is no guardrail or curb of any kind on the existing arch pipe. The proposed project will add "F" rail for the bridge railing and will drain roadway and bridge runoff to the north end of the bridge through shoulder rock and grassy vegetation. The new bridge railing will keep runoff from draining directly off the road and into Stewart Creek.

2. ENDANGERED SPECIES ACT

2.1 Biological Opinion

2.1.1 Biological Information

Essential features of salmonid habitat required for the survival and recovery of listed species are water quality, water quantity, water temperature, water velocity, substrate, cover/shelter, food, space, and safe passage conditions (NMFS 1996). Together, these factors determine the biotic composition, structure, function, and stability of aquatic and riparian ecosystems and their ability to support the biological requirements of the species (Spence *et al.* 1996).

Pacific anadromous salmonid populations in the Pacific Northwest have evolved under the unimpaired flow regimes historically provided by their natal streams. The flow regimes reflect the dynamic character of flowing water systems, which is determined by the quantity, timing and natural variability of stream flow. These characteristics drive many of the physical processes in watersheds that are important to salmonid survival and conservation. Unimpaired flow regimes benefit salmonids in two critical ways: (1) They provide temporally and spatially appropriate

water quantities to support specific life stages, and (2) they ensure self-sustaining ecosystem processes by which salmonid habitat is created and maintained over time.

Dynamic hydraulic, geomorphic, and ecologic processes must be maintained to provide salmonids a high probability of access to sufficient quantities of quality habitats for timely and successful completion of each and every life stage in freshwater (Bisson *et al.* 1997). However, given inter-annual hydrologic variability, even under an unimpaired flow regime, the quantity and quality of freshwater habitat necessary to obtain food and grow, escape predation, resist disease, migrate, and survive extreme environmental events is highly variable and can readily become limiting (Bjornn and Reiser 1991). Stream-rearing salmonids must survive extended periods in freshwater through winter and summer rearing bottlenecks (Bjornn and Reiser 1991). In addition, environmental conditions during extensive downstream and upstream migrations during juvenile and smolt life stages and again during adult and pre-spawning life stages can also significantly limit survival.

2.1.2 Evaluating Proposed Action

The standards for determining jeopardy are set forth in section 7(a)(2) of the ESA as defined by 50 CFR Part 402 (the consultation regulations). NOAA Fisheries must determine whether the action is likely to jeopardize the listed species. This analysis involves the initial steps of defining the biological requirements and current status of the listed species, and evaluating the relevance of the environmental baseline to the species' current status. Subsequently, NOAA Fisheries evaluates whether the action is likely to jeopardize the listed species by determining if the species can be expected to survive with an adequate potential for recovery. In making this determination, NOAA Fisheries must consider the estimated level of mortality attributable to: (1) Collective effects of the proposed or continuing action; (2) the environmental baseline; and (3) any cumulative effects. This evaluation must take into account measures for survival and recovery specific to the listed salmonid's life stages that occur beyond the action area. If NOAA Fisheries finds that the action is likely to jeopardize the listed species, NOAA Fisheries must identify reasonable and prudent alternatives for the action. For the proposed action, NOAA Fisheries' jeopardy analysis considers direct or indirect mortality of fish attributable to the action.

2.1.2.1 Biological Requirements

The first step in the method NOAA Fisheries uses for applying the ESA section 7(a)(2) to listed salmon is to define the biological requirements of the species most relevant to each consultation. NOAA Fisheries also considers the current status of the listed species by taking into account population size, trends, distribution and genetic diversity. To assess the current status of the listed species, NOAA Fisheries starts with the determinations made in its decision to list MCR steelhead for ESA protection and also considers new data available that are relevant to the determination.

The relevant biological requirements are those necessary for MCR steelhead to survive and recover to naturally-reproducing population levels, at which time protection under the ESA would become unnecessary. Adequate population levels must safeguard the genetic diversity of the listed stock, enhance their capacity to adapt to various environmental conditions, and allow them to become self-sustaining in the natural environment.

For this consultation, the biological requirements are habitat characteristics that function to support successful spawning, rearing and migration. These involve adequate fish passage, water quality, water quantity, substrate, shade and cover. Because the current status of the MCR steelhead, based upon their risk of extinction, has not significantly improved since the species were listed, adverse effects to these biological requirements have the potential to be significant.

2.1.2.2 Middle Columbia River Steelhead

MCR steelhead occupy the Columbia River basin from above the Wind River in Washington and the Hood River in Oregon, and continue upstream to include the John Day and Umatilla Rivers in Oregon and the Yakima River in Washington. Summer steelhead are widespread throughout the ESU, winter steelhead occur in Mosier, Chenowith, Mill, and Fifteenmile Creeks in Oregon, and in the Klickitat and White Salmon Rivers in Washington. The John Day River probably represents the largest native, naturally-spawning stock of steelhead in the region (NMFS 2000).

Assuming comparable run sizes for other drainage areas in this ESU, the total historical run size may have exceeded 300,000 steelhead (NMFS 2000).

Historically, MCR summer steelhead life stages were present in stream systems year-round, with the adult entry beginning as early as June (Childerhose and Trim 1979). The smolt out-migration window peaks in May, and can extend into July, or even August, depending on water supply conditions (Childerhose and Trim 1979, Groot and Margolis 1991). All steelhead upstream of The Dalles Dam are summer-run (Schreck *et al.* 1986).

The only substantial habitat blockage now present in this ESU is at Pelton Dam on the Deschutes River, but other significant blockages occur throughout the region. Water withdrawals and overgrazing have seriously reduced summer flows in the principal summer steelhead spawning and rearing tributaries of the Deschutes, Umatilla and John Day Rivers.

Current wild steelhead runs to the mouth of the Umatilla River have been conservatively estimated to number about 2,600 fish, a fraction of estimated historical run sizes (NMFS 2000).

The majority of steelhead spawners are found in the upper mainstem Umatilla River and upper tributaries, although some spawning occurs in the middle tributaries. Spawning activity normally begins in March, with the peak occurring in April and May.

Steelhead juveniles that remain in the middle tributaries and mid- to upper Umatilla River through the summer are at risk from high water temperatures.

Wild summer steelhead juveniles rear in the Umatilla basin for one to three years before migrating to the ocean as smolts. Steelhead which have reared in the upper mainstem and middle tributaries may move downstream to the middle mainstem to rear before migrating with the majority of smolts out of the system at two years of age. Steelhead migrate out of the Umatilla basin from March through July, peaking in May.

Some juveniles are present in the lower mainstem Umatilla River and most migrate out at two years with the rest of the population, however, summer stream conditions could be limiting.

Birch Creek is the only tributary in the Umatilla basin that currently supports anadromous fish and is not on tribal or national forest land. Low flow, due to natural conditions, and irrigation withdrawal, has been identified as a limiting factor for wild summer steelhead production on both East and West Birch Creeks.

Steelhead spawn and rear in the upper Birch Creek watershed. Birch Creek produces one-third of the wild summer steelhead in the Umatilla basin, with most of those coming from East Birch Creek and its tributaries. No salmon are known to occur in the Birch Creek system. Adult steelhead migrate upstream from late October to July, with peak movement from February through May. Smolt density model data for Birch Creek indicate that the creek, from its mouth to East Birch Creek, is primarily migration habitat for steelhead. Stewart Creek is a tributary of Birch Creek that joins Birch Creek 2.57 kilometers downstream of the project site. ODFW has confirmed that steelhead use Stewart Creek and can move past the project site in times of higher water flows. StreamNet shows Stewart Creek as providing spawning and rearing habitat from river kilometer (rkm) zero to two, rearing and migration from rkm two to four, and spawning and rearing from rkm four to six.

The proposed project is located within the segment providing rearing and migration habitat. Historic accounts have documented both juveniles and adults using Stewart Creek. Because the land adjacent to Stewart Creek is entirely private, ODFW has virtually no habitat or fish usage data other than personal accounts and past District Fish Biologist observations.

2.1.2.3 Environmental Baseline

The project is within the Stewart Creek watershed of the Umatilla River basin. The Stewart Creek watershed drains 37.73 square kilometers. The confluence of Stewart Creek and Birch Creek is approximately 2.57 kilometers downstream from the project area. Birch creek continues approximately 15.12 kilometers downstream to the Umatilla River. ODFW has habitat survey data on East and West Birch Creeks. Because the land adjacent to Stewart Creek is privately owned, ODFW does not have habitat data for Stewart Creek, a tributary to Birch Creek. Habitat data was collected for the project area and 100 meters upstream and downstream from the project area to determine if the habitat conditions in Stewart Creek were similar to those in East and West Birch Creeks. After collecting habitat data at the project site and limited field visits farther upstream on Stewart Creek, the conditions in the lower reaches of East and West Birch Creeks appear very similar to the conditions in Stewart Creek. Therefore, baseline

conditions and effects to those conditions for both Birch Creek and Stewart Creek have been combined.

Birch Creek Watershed

Birch Creek originates on the western slopes of the Blue Mountains Physiographic Province and flows in a northwesterly direction through the Columbia River Province into the Umatilla River, and continues until the Umatilla River enters the Columbia River at Umatilla, Oregon. Its course takes it through several different management areas, including U.S. Forest Service land, Umatilla Indian Reservation land, and private agricultural land. The project area is within the Columbia River Physiographic Province (Franklin and Dyrness, 1973). The Columbia River province is characterized by grass/steppe vegetation, warm summers, and cold winters. Streams in the Columbia River province tend to be alkaline in nature, and are subject to elevated temperatures in summer and colder temperatures, with the possibility of anchor ice forming, in winter.

The average monthly air temperature at Pendleton, Oregon (for the period 1956 through 1999) ranged from a minimum of -4 degrees Celsius in January, to a maximum of 31.6 degrees Celsius in July. The annual average precipitation at Pendleton was 42.4 centimeters for the period of 1956 through 1999, with monthly average precipitation ranging from 0.9 centimeters in July, to 5.5 centimeters in November.

Natural vegetation assemblages found in the Birch Creek watershed outside the coniferous forests at the headwaters include sagebrush-wheatgrass (*Artemisia tridentata/Agropyron spicatum*) and wheatgrass-fescue (*Agropyron spicatum-Festuca idahoensis*), with scattered willow *(Salix sp.)* and black cottonwood (*Populus trichocarpa*). Most of the land surface and dominant vegetation has been modified by grazing and agriculture.

The ODFW-defined in-water work period for Birch Creek is July 1 to October 31 (ODFW 2000). Birch Creek is listed on ODEQ's 303 (d) list for Temperature and Modified Flow (ODEQ 1999).

Stewart Creek Watershed

Stewart Creek originates on the western slopes of the Blue Mountains Physiographic Province and flows in a northwesterly direction through the Columbia River Province into Birch Creek, which then flows into the Umatilla River, and continues until the Umatilla River enters the Columbia River at Umatilla, Oregon. Its course takes it through several different management areas including U.S. Forest Service lands, Umatilla Indian Reservation lands, and private agricultural land. The area of private land where the proposed project occurs is within the Columbia River Physiographic Province (Franklin and Dyrness, 1973). The Columbia River province is characterized by grass/steppe vegetation, warm summers, and cold winters. Streams in the Columbia River province tend to be alkaline in nature, and subject to elevated temperatures in the summer and cold temperatures in the winter with the possibility of anchor ice forming.

Natural vegetation assemblages found in the Stewart Creek watershed include wheatgrass (*Artemisia tridentata/Agropyron spicatum*) and wheatgrass-fescue (*Agropyron spicatum-Festuca*

idahoensis), with scattered willow (*Salix spp.*), alder (*Alnus spp*.) and black cottonwood (*Populus trichocarpa*) in the riparian areas. Grazing and agriculture have modified most of the land surface and dominant vegetation. Stewart Creek, closer to the headwaters, has been historically grazed and farmed. For almost the entire length of Stewart Creek, grazing and agricultural activities occur right up to the edge of the creek, and leave very little riparian vegetation. Creek banks are steep, and are eroding in the upper watershed. There are several springs that contribute to Stewart Creek above the proposed project area, however, these springs move subsurface during the drier months before they get to the proposed project area, leaving the project area dry during typical summer and fall months.

The ODFW-defined in-water work period for Stewart Creek and the project area is July 1 to October 31 (ODFW 2000). Stewart Creek is not listed on ODEQ's water quality limited 303 (d) list (ODEQ 1999).

2.1.3 Analysis of Effects

2.1.3.1 Effects of Proposed Action

Creeks and rivers are dynamic systems that naturally alter their courses in response to many physical processes. Roadways and other structures constructed along waterways are subject to flooding and undercutting as a result of these natural changes in the stream course. Structural hardening of embankments is the traditional means of protecting these structures along waterways. The structural hardening also results in effects to the waterway.

Fish habitats are enhanced by the diversity of habitats at the land-water interface and adjacent bank (USACE 1977). Streamside vegetation provides shade that reduces water temperature. Overhanging branches provide cover from predators. Insects and other invertebrates that fall from overhanging branches may be preyed upon by fish, or provide food sources for other prey organisms. Immersed vegetation, logs, and root wads provide points of attachment for aquatic prey organisms, shelter from swift currents during high flow events, retain bedload materials, and reduce flow velocity.

<u>Sedimentation</u>
Potential effects to listed salmonids from the proposed action include both direct and indirect effects. Potential direct effects include mortality from exposure to suspended sediments (turbidity) and contaminants resulting for construction. Potential indirect effects include behavioral changes resulting from elevated turbidity levels (Sigler *et al.* 1984, Berg and Northcote 1985, Whitman *et al.* 1982, Gregory 1988), during river bank habitat alterations.

Suspended sediment and turbidity influences on fish reported in the literature range from beneficial to detrimental. Elevated total suspended solids (TSS) conditions have been reported to enhance cover conditions, reduce piscivorus fish/bird predation rates, and improve survival. Elevated TSS conditions have also been reported to cause physiological stress, reduce growth,

and adversely affect survival. Of key importance in considering the detrimental effects of TSS on fish are the frequency and the duration of the exposure, not just the TSS concentration.

Behavioral avoidance of turbid waters may be one of the most important effects of suspended sediments (DeVore *et al.* 1980, Birtwell *et al.* 1984, Scannell 1988). Salmonids have been observed to move laterally and downstream to avoid turbid plumes (McLeay *et al.* 1984, 1987, Sigler *et al.* 1984, Lloyd 1987, Scannell 1988, Servizi and Martens 1991). Juvenile salmonids tend to avoid streams that are chronically turbid, such as glacial streams or those disturbed by human activities, unless the fish need to traverse these streams along migration routes (Lloyd *et al.* 1987). In addition, a potentially positive reported effect is providing refuge and cover from predation (Gregory and Levings 1988).

Fish that remain in turbid, or elevated TSS, waters experience a reduction in predation from piscivorus fish and birds (Gregory and Levings 1998). In systems with intense predation pressure, this provides a beneficial trade off (*e.g.*, enhanced survival) to the cost of potential physical effects (*e.g.*, reduced growth). Turbidity levels of about 23 Nephalometric Turbidity Units (NTU) have been found to minimize bird and fish predation risks (Gregory 1993). Exposure duration is a critical determinant of the occurrence and importance of physical or behavioral effects (Newcombe and MacDonald 1991). Salmonids have evolved in systems that periodically experience short-term pulses (days to weeks) of high suspended sediment loads, often associated with flood events, and are adapted to such high pulse exposures. Adult and larger juvenile salmonids may be little affected by the high concentrations of suspended sediments that occur during storm and snowmelt runoff episodes (Bjornn and Reiser 1991). However, research shows that chronic exposure can cause physiological stress responses that can increase maintenance energy and reduce feeding and growth (Redding *et al.* 1987, Lloyd 1987, Servizi and Martens 1991).

Turbidity, at moderate levels, has the potential to adversely affect primary and secondary productivity, and at high levels, has the potential to injure and kill adult and juvenile fish, and may also interfere with feeding (Spence *et al.* 1996). Newly-emerged salmonid fry may be vulnerable to even moderate amounts of turbidity (Bjornn and Reiser 1991). Other behavioral effects on fish, such as gill-flaring and feeding changes, have been observed in response to pulses of suspended sediment (Berg and Northcote 1985). Fine, redeposited sediments also have the potential to adversely affect primary and secondary productivity (Spence *et al.* 1996), and to reduce incubation success (Bell 1991) and cover for juvenile salmonids (Bjornn and Reiser 1991).

Excavation in the stream channel associated with the culvert work and roughened chute in Stewart Creek may elevate the risk for turbidity and sediment transport within the action area. Because the potential for turbidity will be localized and brief, the probability of listed salmonids within the action area during the in-water work period, the likelihood of direct mortality is not reasonably certain. In-water work timing during the preferred in-water work period of July 1 through October 31, work area isolation, and fish removal would be employed as necessary,

depending on the presence of fish and/or flowing water, to minimize the risk from turbidity and sediment transport during in-water work activities.

Chemical Contamination

As with all construction activities, accidental release of fuel, oil, and other contaminants may occur. Operation of the backhoes, excavators, and other equipment requires the use of fuel, lubricants, *etc.*, which, if spilled into the channel of a waterbody or into the adjacent riparian zone, can injure or kill aquatic organisms. Petroleum-based contaminants (such as fuel, oil, and some hydraulic fluids) contain poly-cyclic aromatic hydrocarbons (PAHs), which can be acutely toxic to salmonids at high levels of exposure and can also cause chronic lethal and acute and chronic sublethal effects to aquatic organisms (Neff 1985). Similarly, exposure to herbicides can have lethal and sublethal effects on salmonids, aquatic invertebrates, aquatic vegetation, and target and non target riparian vegetation (Spence *et al.* 1996).

Excavation of the stream channel associated with the culvert work and other in-water work will elevate the risk for chemical contamination of the aquatic environment within the action area. Because the potential for chemical contamination should be localized and brief, the probability of direct mortality is not reasonably certain. In-water work timing during the preferred in-water work timing period of July 1 through October 31, work area isolation, and fish removal would be employed as necessary, depending on presence of fish and/or flowing water to minimize the risk from chemical contamination during in-water work activities. The contractor would also be required to develop, implement, and monitor a site-specific pollution control plan in an effort to further minimize risk to the aquatic environment. Excavation will be done from the road deck and there will be no equipment in the channel.

Fish Rescue, Salvage and Relocation

As a result of the proposed action, culvert replacement activities at the Stewart Creek culvert will require potential direct handling of listed salmonids during fish removal. The BA estimates the potential to capture and relocate up to 10 MCR steelhead juveniles during the work area isolation and fish rescue and salvage efforts that will occur during the Stewart Creek culvert replacement. Assuming a 5% direct or delayed mortality rate from capture and relocation stress, fish salvage and removal could result in lethal take of up to 1 MCR steelhead juveniles.

Water Quality and Hydrologic Stormwater Effects

The potential exists for an increase in polluted runoff into Stewart Creek within the project area from the impervious surface (Booth and Jackson 1997). However, the proposed stormwater runoff treatment system will more than offset any potential increase in adverse effects to water quality as a result of the proposed action.

Currently, drainage from the roadway drains directly off the pavement through the shoulder rock and through a variety of grasses before moving downslope into Stewart Creek. Drainage at the existing arch pipe moves directly through shoulder rock and into Stewart Creek. There is no guardrail or curb of any kind on the existing arch pipe. The proposed project will add “F” rail for the bridge railing and will drain roadway and bridge runoff to the north end of the bridge

through shoulder rock and grassy vegetation. The new bridge railing will keep runoff from draining directly off the road and into Stewart Creek.

Riparian Vegetation

Woody riparian vegetation provides large wood to the stream, which encourages the creation of rearing and spawning areas. Riparian vegetation also provides water quality functions (*e.g.* temperature control and nutrient transformation), bank stability, detritus (insect and leaf input, small wood for substrate for insects, *etc.*), microclimate formation, floodplain sediment retention and vegetative filtering, and recharge of the stream hyporheic zone. Riparian vegetation is extremely limited and consists of mostly grasses. Vegetation removal will consist of grasses and weeds, with one small Black Hawthorn tree (*Crataegus douglasii*), and will cover approximately 592 square meters for the project. This total includes ditch vegetation. Riparian vegetation lost will be approximately three square meters of wheatgrass (*Agropyron spp*.), teasel (*Dipsacus fullonum*), and other weeds. The site restoration plans will result in the replanting of 30 willows (*Salix spp*.) within the two-year high water elevation, and 15 Black Hawthorn (*Crataegus douglasii*) above the two-year high water elevation.

Stream Hydraulics

The construction of the new bridge crossing on Stewart Creek would decrease hydraulic constriction, improve fish passage, and improve general ecological connectivity such as sediment transport and large woody debris transport along Stewart Creek. At least sixteen 3000 kilogram boulders will be placed in the channel hydraulic roughness, energy dissipation, cover, and hydraulic shadow.

Fish Passage

Although downstream fish passage may be temporarily impaired by isolating the channel in Stewart Creek during culvert replacement, the proposed action would result in improved year-round fish passage conditions for both adult and juvenile salmonids and native fishes, including MCR steelhead, within the Stewart Creek portion of the action area. As a direct result, long-term, beneficial effects to fish passage are expected to persist along Stewart Creek. Placing large rock in a stream channel has the potential to create sub-surface flow due to the porosity. This could create a passage barrier at moderate and lower flows. This project will utilize methods that will reduce the risk of sub-surface flow (mixing of different sizes of material including fines and water compaction).

2.1.3.2 Cumulative Effects

Cumulative effects are defined in 50 CFR 402.02 as those effects of "future State or private activities, not involving Federal activities, that are reasonably certain to occur within the action area of the Federal action subject to consultation." Future Federal actions and land management activities are being (or have been) reviewed through separate section 7 consultation processes. Therefore, these actions are not considered cumulative to the proposed action.

NOAA Fisheries is not aware of any specific future non-Federal activities within the action area that would cause greater effects to listed species than presently occurs. NOAA Fisheries assumes that future private and state actions will continue at similar intensities as in recent years.

2.1.4 Conclusion

NOAA Fisheries has determined that, based on the available information, the proposed action is not likely to jeopardize the continued existence of MCR steelhead. NOAA Fisheries used the best available scientific and commercial data to analyze the effects of the proposed action on the biological requirements of the species relative to the environmental baseline, together with cumulative effects. NOAA Fisheries applied its evaluation methodology to the proposed action and found that it could cause slight, short-term degradation of anadromous salmonid habitat due to increases in sedimentation, turbidity, and temperature. Furthermore, NOAA Fisheries expects that construction-related effects and work isolation activities could alter normal feeding and sheltering behavior of juvenile MCR steelhead should any be present in the action area during the proposed action. NOAA Fisheries expects some direct or delayed mortality of juvenile MCR steelhead as a result of fish rescue, salvage, and relocation activities should any be present in the action area during the proposed action. However, NOAA Fisheries expects beneficial water quality and hydrologic effects from the attenuation of peak flows and increased potential base flow as a result of the stormwater treatment measures and the long-term beneficial effects of improved fish passage and hydraulic conditions as a result of the Stewart Creek culvert retrofit and replacement.

NOAA Fisheries' conclusions are based on the following considerations: (1) Most of the proposed work will occur outside of the flowing waters of Stewart Creek (*i.e.*, in the dry); (2) in-water work will occur during the ODFW preferred in-water work period of July 1 through October 31, which NOAA Fisheries expects will minimize the likelihood of MCR steelhead presence in the action area due to no flow, low flow, and/or warm water conditions; (3) any increases in sedimentation and turbidity in the project reaches Stewart Creek will be short-term and minor in scale, and would not change or worsen existing conditions for stream substrate in the action area; (4) it is not likely to impair properly functioning habitat, appreciably reduce the functioning of already impaired habitat, or retard the long-term progress of impaired habitat toward proper functioning condition essential to long-term survival and recovery at the population ESU scale; and (5) the proposed action will provide improved fish passage.

2.1.5 Reintiation of Consultation

This concludes formal consultation on the Umatilla High Culvert (Stewart Creek) Project. As provided in 50 CFR 402.16, reintiation of formal consultation is required where discretionary Federal agency involvement or control over the action has been retained or is authorized by law and if: (1) The amount or extent of incidental take is exceeded; (2) new information reveals effects of the agency action that may affect listed species or critical habitat in a manner or to an extent not considered in this Opinion; (3) the agency action is subsequently modified in a manner that causes an effect to the listed species or critical habitat not considered in this

Opinion; or (4) a new species is listed or critical habitat is designated that may be affected by the action. In instances where the amount or extent of authorized incidental take is exceeded, any operations causing such take must cease pending reintiation of consultation.

2.2 Incidental Take Statement

Section 9 and rules promulgated under section 4(d) of the ESA prohibit any taking (harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, collect, or attempt to engage in any such conduct) of listed species without a specific permit or exemption. "Harm" is further defined to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing behavioral patterns such as breeding, feeding, and sheltering. "Harass" is defined as actions that create the likelihood of injuring listed species to by annoying it to such an extent as to significantly alter normal behavior patterns which include, but are not limited to, breeding, feeding, and sheltering. "Incidental take" is take of listed animal species that results from, but is not the purpose of, the Federal agency or the applicant carrying out an otherwise lawful activity. Under the terms of section 7(b)(4) and section 7(o)(2), taking that is incidental to, and not intended as part of, the agency action is not considered prohibited taking provided that such taking is in compliance with the terms and conditions of this incidental take statement.

An incidental take statement specifies the effect of any incidental taking of listed species. It also provides reasonable and prudent measures that are necessary to minimize effects and sets forth terms and conditions with which the action agency must comply to implement the reasonable and prudent measures.

2.2.1 Amount or Extent of the Take

NOAA Fisheries anticipates that the actions covered by this Opinion are reasonably certain to result in incidental take of MCR steelhead because of harm from increased sediment levels, chemical contamination, temperature increases, and the potential for direct incidental take during in-water work. Handling of juvenile steelhead during the work isolation process may result in incidental take of individuals if juvenile salmonids are present during the construction period. NOAA Fisheries anticipates non-lethal incidental take of up to 10 juvenile individuals, of which, lethal take of up to one juvenile steelhead could occur as a result of the fish rescue, salvage, and relocation activities covered by this Opinion. The potential impacts of the other project components on population levels are largely unquantifiable, and NOAA Fisheries does not expect them to be measurable in the long term. The extent of authorized take is limited to MCR steelhead in Stewart Creek and is limited to that caused by the proposed action within the action area.

2.2.2 Reasonable and Prudent Measures

The measures described below are non-discretionary. They must be implemented so that they become binding conditions in order for the exemption in section 7(a)(2) to apply. The FHWA has the continuing duty to regulate the activities covered in this incidental take statement. If the

FHWA fails to require the contractor to adhere to the terms and conditions of the incidental take statement through enforceable terms added to the document authorizing this action, or fails to retain the oversight to ensure compliance with these terms and conditions, the protective coverage of section 7(a)(2) may lapse.

NOAA Fisheries believes that the following reasonable and prudent measures are necessary and appropriate to minimize take of the above species. The FHWA shall:

1. Minimize the likelihood of incidental take from activities involving culvert retrofitting, bridge construction, use of heavy equipment, roughened chute construction, earthwork, site restoration, or that may otherwise involve in-water work or affect fish passage by directing the contractor to avoid or minimize disturbance to riparian and aquatic systems.

2. Minimize the likelihood of incidental take from in-water work activities by ensuring that the in-water work activities (roughened chute, culvert retrofitting) occur isolated from flowing water.

3. Complete a comprehensive monitoring and reporting program to ensure implementation of these conservation measures are effective in minimizing the likelihood of take from permitted activities.

2.2.3 Terms and Conditions

To be exempt from the prohibitions of section 9 of the ESA, FHWA must comply with the following terms and conditions, which implement the reasonable and prudent measures described above for each category of activity.

1. To implement reasonable and prudent measure #1 (culvert retrofitting, bridge construction, use of heavy equipment, roughened chute construction, earthwork, site restoration, or that may otherwise involve in-water work or affect fish passage), the FHWA shall ensure:

    a. Project design. Alteration or disturbance of the stream banks and existing riparian vegetation will be minimized.
    b. In-water work. All work within the active channel will be completed within the in-water work period of July 1 - October 31 for the site as recommended by ODFW[2]. Extensions of the in-water work period must be approved in writing by NOAA Fisheries.
    c. Pollution and erosion control plan. A pollution and erosion control plan (PECP) will be developed for the project to prevent point-source pollution related to

[2] Oregon Department of Fish and Wildlife, *Guidelines for Timing of In-Water Work to Protect Fish and Wildlife Resources*, 12 pp (June 2000)(identifying work periods with the least impact on fish)(http://www.dfw.state.or.us/ODFWhtml/InfoCntrHbt/0600_inwtrguide.pdf).

construction operations. The PECP will contain the pertinent elements listed below and meet requirements of all applicable laws and regulations.

i. Measures will be taken to prevent erosion and sedimentation associated with access roads, construction sites, equipment and material storage sites, fueling operations, and staging areas.

ii. A description of the hazardous products or materials that will be used, including inventory, storage, handling, and monitoring.

iii. A spill containment and control plan with notification procedures, specific cleanup and disposal instructions for different products, quick response containment and cleanup measures that will be available on site, proposed methods for disposal of spilled materials, and employee training for spill containment will be developed.

iv. Measures will be taken to prevent construction debris from falling into any aquatic habitat. Any material that falls into a stream during construction operations will be removed in a manner that has a minimum effect on the streambed and water quality.

d. Pre-construction activities. Before significant alteration of the action area, the following actions will be accomplished:

i. Boundaries of the clearing limits associated with site access and construction are flagged to prevent ground disturbance of critical riparian vegetation, wetlands and other sensitive sites beyond the flagged boundary.

ii. A supply of erosion control materials (*e.g.*, silt fence and straw bales) is on hand to respond to sediment emergencies. Sterile straw or hay bales will be used when available to prevent introduction of weeds.

iii. All temporary erosion controls (*e.g.*, straw bales, silt fences) are in place and appropriately installed downslope of project activities within the riparian area. Effective erosion control measures will be in place at all times during the contract, and will remain and be maintained until such time that permanent erosion control measures are effective.

e. Earthwork. Earthwork, including drilling, blasting, excavation, dredging, filling and compacting, is completed in the following manner:

i. Boulders, rock, woody materials, and other natural construction materials used for the project must be obtained from outside of the riparian area except boulders and trees that would be otherwise removed as a result of the proposed action as described in section 1.2 of this Opinion or as otherwise approved by NOAA Fisheries.

ii. Material removed during excavation will only be placed in locations where it cannot enter streams or other waterbodies.

iii. All exposed or disturbed areas will be stabilized to prevent erosion.

(1) Areas of bare soil within 150 feet of waterways, wetlands or other sensitive areas will be stabilized by native seeding,[3] mulching, and placement of erosion control blankets and mats, if applicable, quickly as reasonable after exposure, but within seven days of exposure.

(2) All other areas will be stabilized as quickly as reasonable, but within 14 days of exposure.

(3) Seeding outside of the growing season will not be considered adequate for permanent stabilization.

f. Heavy Equipment. Heavy equipment used will be fueled, maintained and stored as follows:

i. All vehicles and equipment (except for track-mounted equipment) will be stored at least 150 feet from any stream or waterbody.

ii. Fueling of vehicles, storage of hazardous materials, or vehicle maintenance will not occur within 150 feet of any stream or waterbody except for stationary equipment such as cranes, generators, or other equipment that is not readily mobilized.

iii. All vehicles operated within 150 feet of any stream or waterbody will be inspected daily for fluid leaks before leaving the vehicle staging area. Any leaks detected will be repaired before the vehicle resumes operation.

iv. When not in use, vehicles will be stored in the vehicle staging area.

g. Streambank alteration.

i. The use of rock and riprap is avoided or minimized.

ii. Rock will be individually placed in a way that produces an irregularly contoured face to provide velocity disruption. No end dumping will be allowed.

iii. Any instream large wood or riparian vegetation that is moved or altered during construction will stay on site or be replaced with a functional equivalent.

iv. The bankline will be revegetated using natural vegetation.

h. Site restoration. Site restoration and clean-up, including protection of bare earth by seeding, planting, mulching and fertilizing, will be done in the following manner:

i. Disturbed areas will be planted with native vegetation specific to the project vicinity or the region of the state where the project is located, and will comprise a diverse assemblage of woody and herbaceous species.

ii. No herbicide application will occur as part of this permitted action. Mechanical removal of undesired vegetation and root nodes is permitted.

iii. No surface application of fertilizer will be used within 50 feet of any stream channel as part of this permitted action.

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[3] By Executive Order 13112 (February 3, 1999), Federal agencies are not authorized to permit, fund or carry out actions that are likely to cause, or promote, the introduction or spread of invasive species. Therefore, only native vegetation that is indigenous to the project vicinity, or the region of the state where the project is located, shall be used.

iv. Roughened chute construction will have large appropriately sized rocks at the bottom of the chute.

v. A gradation of rock size will be used including fines to help seal the interstitial spaces and reduce the possibility of sub-surface flow.

vi. Any adjustments in the channel that pose passage problems for fish will be monitored and fixed to reestablish passage (boulder adjustments, addition of smaller material, *etc.*). These adjustments must be done within the limits of these terms and conditions.

vii. Plantings will achieve an 80% survival or 80% cover success after five years.

(1) If success standard has not been achieved after five years, the applicant will submit an alternative plan to NOAA Fisheries. The alternative plan will address temporal loss of function.

(2) Plant establishment monitoring will continue and monitoring reports will be submitted to NOAA Fisheries on an annual basis until site restoration success has been achieved.

2. To implement reasonable and prudent measure #2 (in-water work area activities), the FHWA shall ensure that the in-water work activities (roughened chute, culvert retrofitting) are isolated from flowing water.

a. If the fish-salvaging aspect of this project requires the use of seine equipment to capture fish, it must be accomplished as follows:

i. Before and intermittently during pumping, attempts will be made to seine-and-release fish from the work isolation area as is prudent to minimize risk of injury.

ii. Seining will be conducted by, or under the supervision of a fishery biologist experienced in such efforts. Staff working with the seining operation must have the necessary knowledge, skills, and abilities to ensure the safe handling of all ESA-listed fish.

iii. ESA-listed fish must be handled with extreme care and kept in water to the maximum extent possible during seining and transfer procedures. The transfer of ESA-listed fish must be conducted using a sanctuary net that holds water during transfer, whenever appropriate, to prevent the added stress of an out-of-water transfer.

iv. Seined fish must be released as near as possible to capture sites.

v. The FHWA shall ensure that the transfer of any ESA-listed fish to third parties other than NOAA Fisheries personnel receives prior approval from NOAA Fisheries.

vi. The FHWA shall ensure that any other Federal, state, and local permits and authorizations necessary for the conduct of the seining activities will be obtained before project seining activity.

vii. The FHWA must allow NOAA Fisheries or its designated representative to accompany field personnel during the seining activity, and allow such representative to inspect the seining records and facilities.

viii. A description of any seine-and-release effort will be included in a post-project report, including the name and address of the supervisory fishery biologist, methods used to isolate the work area and minimize disturbances to ESA-listed species, stream conditions before and following placement and removal of barriers, the means of fish removal, the number of fish removed by species, the condition of all fish released, and any incidence of observed injury or mortality.

b. If the fish-salvaging aspect of this project requires the use of electrofishing equipment to capture fish, it must be accomplished as described in the NOAA Fisheries electrofishing guidelines[4].

c. After completion of the project, the existing channel should be re-watered in a way that will not significantly affect water quality or cause fish stranding. The diversion pipe shall be maintained in place while slowly dismantling the upper and lower dams. This will allow the new channel to slowly water-up, while still maintaining flow in the lower channel below the project. Because the area above the upper dam has temporarily expanded usable habitat for fish, slowly ramping the water will allow fish to get back into the actual low-flow channel. An ODOT or ODFW biologist shall be on site to monitor for fish stranding during this process.

d. Any pump used for dewatering or diverting authorized under this Opinion must have a fish screen installed, operated, and maintained in accordance to NOAA Fisheries' fish screen criteria.

3. To implement reasonable and prudent measure #3 (monitoring and reporting), the FHWA shall ensure that:

a. Within 120 days of completing the project, the FHWA shall ensure submittal of a monitoring report to NOAA Fisheries describing the FHWA's success meeting their permit conditions. This report will consist of the following information:

i. <u>Project identification</u>.

(1) Project name,

(2) starting and ending dates of work completed for this project, and

(3) the FHWA contact person.

ii. <u>Isolation of in-water work area</u>. All projects involving isolation of in-water work areas must include a report of any seine-and-release or other fish rescue and salvage activity, including:

(1) The name and address of the supervisory fish biologist,

[4] NMFS (National Marine Fisheries Service), *Backpack Electrofishing Guidelines* (2000) (http://www.nwr.noaa.gov/1salmon/salmesa/pubs/electrog.pdf).

(2) methods used to isolate the work area and minimize disturbances to fish species,
(3) stream conditions before and following placement and removal of barriers,
(4) the means of fish removal,
(5) the number of fish removed by species,
(6) the location and condition of all fish released, and
(7) any incidence of observed injury or mortality.

iii. Pollution and erosion control. A summary of all pollution and erosion control inspection reports, including descriptions of any failures experienced with erosion control measures, efforts made to correct them and a description of any accidental spills of hazardous materials.

iv. Site restoration. Documentation of the following conditions:
(1) Finished grade slopes and elevations,
(2) log and rock structure elevations, orientation, and anchoring, if any,
(3) planting composition and density, and
(4) a plan to inspect and, if necessary, replace failed plantings and structures for a period of five years, including the compensatory mitigation site.

v. Photographic documentation of environmental conditions at the project site before, during and after project completion.
(1) Photographs will include general project location views and close-ups showing details of the project area and project, including pre- and post-construction.
(2) Each photograph will be labeled with the date, time, photo point, project name, the name of the photographer, and a comment describing the photograph's subject.
(3) Relevant habitat conditions include characteristics of channels, streambanks, riparian vegetation, flows, water quality, and other visually discernable environmental conditions at the project area, and upstream and downstream of the project.

b. On an annual basis, for five years after completing the project, the FHWA shall ensure submittal of a monitoring report to NOAA Fisheries describing the FHWA's success in meeting their fish passage and site restoration goals. This report will consist of the following information:

i. Project identification.
(1) Project name,
(2) starting and ending dates of work completed for this project, and
(3) the FHWA contact person.

ii. Site restoration. Documentation of the following conditions:
(1) Any changes in log and rock structure elevations, orientation, and anchoring,
(2) any changes in planting composition and density, and

(3) a plan to inspect and, if necessary, replace failed plantings and structures, including the compensatory mitigation site.

iii. Photographic documentation of environmental conditions at the project site after project completion as they relate to fish passage and site restorations goals as described above.

(1) Photographs will include general project location views and close-ups showing details of the project area and habitat features of the channel within the action area.

(2) Each photograph will be labeled with the date, time, photo point, project name, the name of the photographer, and a comment describing the photograph's subject.

(3) Relevant habitat conditions include characteristics of channels, streambanks, riparian vegetation, flows, water quality, and other visually discernable environmental conditions at the project area, as they relate fish passage and site restorations goals.

iv. Hydrology monitoring of the new channel. Documentation of the following elements:

(1) Water velocity profiles throughout the channel during low, medium and migratory flows.

(2) Observations of juvenile and adult fish usage and passage.

(3) Survey of the channel to determine whether goals were met on design and if improvements can be made to enhance fish passage.

c. Submit monitoring reports to:

NOAA Fisheries
Oregon Habitat Branch, Habitat Conservation Division
Attn: 2003/00017
525 NE Oregon Street, Suite 500
Portland, OR 97232-2778

i. If a dead, injured, or sick endangered or threatened species specimen is located, initial notification must be made to the NOAA Fisheries' Law Enforcement Office, located at Vancouver Field Office, 600 Maritime, Suite 130, Vancouver, Washington 98661; phone: 360/418-4246. Care will be taken in handling sick or injured specimens to ensure effective treatment and care or the handling of dead specimens to preserve biological material in the best possible state for later analysis of cause of death. In conjunction with the care of sick or injured endangered and threatened species or preservation of biological materials from a dead animal, the finder has the responsibility to carry out instructions provided by Law Enforcement to ensure that evidence intrinsic to the specimen is not unnecessarily disturbed.

3. MAGNUSON-STEVENS ACT

3.1 Background

The objective of the essential fish habitat (EFH) consultation is to determine whether the proposed action may adversely affect designated EFH for relevant species, and to recommend conservation measures to avoid, minimize, or otherwise offset potential adverse effects to EFH resulting from the proposed action.

3.2 Magnuson-Stevens Fishery Conservation and Management Act

The Magnuson-Stevens Fishery Conservation and Mangement Act (MSA), as amended by the Sustainable Fisheries Act of 1996 (Public Law 104-267), requires the inclusion of EFH descriptions in Federal fishery management plans. In addition, the MSA requires Federal agencies to consult with NOAA Fisheries on activities that may adversely affect EFH.

EFH means those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity (MSA §3). For the purpose of interpreting the definition of essential fish habitat: "Waters" include aquatic areas and their associated physical, chemical, and biological properties that are used by fish and may include aquatic areas historically used by fish where appropriate; "substrate" includes sediment, hard bottom, structures underlying the waters, and associated biological communities; "necessary" means the habitat required to support a sustainable fishery and the managed species' contribution to a healthy ecosystem, and "spawning, breeding, feeding, or growth to maturity" covers a species' full life cycle (50CFR600.110).

Section 305(b) of the MSA (16 U.S.C. 1855(b)) requires that:

- Federal agencies must consult with NOAA Fisheries on all actions, or proposed actions, authorized, funded, or undertaken by the agency, that may adversely affect EFH.
- NOAA Fisheries shall provide conservation recommendations for any Federal or state activity that may adversely affect EFH.

- Federal agencies shall within 30 days after receiving conservation recommendations from NOAA Fisheries provide a detailed response in writing to NOAA Fisheries regarding the conservation recommendations. The response shall include a description of measures proposed by the agency for avoiding, mitigating, or offsetting the impact of the activity on EFH. In the case of a response that is inconsistent with the conservation recommendations of NOAA Fisheries, the Federal agency shall explain its reasons for not following the recommendations.

The MSA requires consultation for all actions that may adversely affect EFH, and does not distinguish between actions within EFH and actions outside EFH. Any reasonable attempt to encourage the conservation of EFH must take into account actions that occur outside EFH, such

as upstream and upslope activities, that may have an adverse effect on EFH. Therefore, EFH consultation with NOAA Fisheries is required by Federal agencies undertaking, permitting or funding activity that may adversely affect EFH, regardless of its location.

3.3 Identification of EFH

The Pacific Fisheries Management Council (PFMC) has designated EFH for three species of Pacific salmon: Chinook (*Oncorhynchus tshawytscha*); coho (*O. kisutch*); and Puget Sound pink salmon (*O. gorbuscha*) (PFMC 1999). Freshwater EFH for Pacific salmon includes all those streams, lakes, ponds, wetlands, and other waterbodies currently, or historically accessible to salmon in Washington, Oregon, Idaho, and California, except areas upstream of certain impassable man-made barriers (as identified by the PFMC), and longstanding, naturally-impassable barriers (*i.e.*, natural waterfalls in existence for several hundred years). Detailed descriptions and identifications of EFH for salmon are found in Appendix A to Amendment 14 to the *Pacific Coast Salmon Plan* (PFMC 1999). Assessment of potential adverse effects to these species' EFH from the proposed action is based on this information.

3.4 Proposed Action

The proposed action is detailed above in section 1.2 of this document. For the purposes of this consultation, the action area is defined as the streambed and streambank of Stewart Creek, extending upstream to the project disturbance limits, and downstream 33 meters below the project disturbance limits. Stewart Creek is a tributary of the Birch Creek watershed. Other areas of the Birch Creek watershed will not be directly affected. This area has been designated as EFH for various life stages of chinook salmon.

3.5 Effects of Proposed Action

As described in detail in section 2.1.3 of this document, the proposed activities may result in short-term adverse effects to water quality (*e.g.* sediment, chemical contamination, temperature). NOAA Fisheries expects short term adverse effects from increases in turbidity, chemical contamination, and temperature within the action area. NOAA Fisheries expects beneficial effects from having no loss of potential infiltration and base flow contribution as a result of the proposed stormwater treatment system. NOAA Fisheries expects beneficial effects from improved fish passage and hydraulic conditions along Stewart Creek as a result of the proposed culvert retrofit and replacement.

3.6 Conclusion

The proposed action will adversely affect the EFH for chinook salmon.

3.7 EFH Conservation Recommendations

Pursuant to section 305(b)(4)(A) of the Magnuson-Stevens Act, NOAA Fisheries is required to provide EFH conservation recommendations for any Federal or state agency action that would adversely affect EFH. The conservation measures proposed for the project by the FHWA, all of the reasonable and prudent measures and the terms and conditions contained in sections 2.2.2 and 2.2.3 are applicable to salmon EFH. Therefore, NOAA Fisheries incorporates each of those measures here as EFH recommendations.

3.8 Statutory Response Requirement

Please note that the MSA (section 305(b)) and 50 CFR 600.920(j) requires the Federal agency to provide a written response to NOAA Fisheries after receiving EFH conservation recommendations within 30 days of its receipt of this letter. This response must include a description of measures proposed by the agency to avoid, minimize, mitigate or offset the adverse effects of the activity on EFH. If the response is inconsistent with a conservation recommendation from NOAA Fisheries, the agency must explain its reasons for not following the recommendation.

3.9 Supplemental Consultation

The FHWA must reinitiate EFH consultation with NOAA Fisheries if either action is substantially revised or new information becomes available that affects the basis for NOAA Fisheries' EFH conservation recommendations (50 CFR 600.920).

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